

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions and listings of claims in the application:

LISTING OF CLAIMS:

1. (currently amended): A method of manufacturing glass ~~articles~~ preforms for press molding by continuously separating glass gobs from a glass melt flow continuously flowing out of a nozzle at a rate of flow and forming the separated glass gobs with glass preform forming members that are intermittently or continuously moving, ~~characterized in that the method~~ comprising:

moving a support member whereby said support member approaches a front end of the nozzle, so that a front end of the glass melt flow is received by the support member, and then dropping the support member ~~is dropped~~ more rapidly than the rate of flow of the glass melt flow to separate a glass gob from the glass melt flow;

transferring the separated glass gob from the support member to a stopped or moving glass preform forming member, which is operative to form a glass preform for press molding ~~mold a glass article, during a transfer period;~~ and

forming the glass ~~article~~ preform by moving at least one ~~moving~~ glass preform forming member while cooling the glass to form a solid glass preform, wherein

in the case where the glass gob is ~~moved~~ transferred to a stopped glass preform forming member, the ~~transfer~~ period during which the glass preform forming member is stopped for transfer of the glass gob from the support member to the glass preform forming member is made shorter than a gob preparation period, defined as the time required for preparing one glass gob

from the glass melt flow using the support member and transferring the glass gob to the glass preform forming member.

2. (currently amended): A method of manufacturing glass ~~articles~~ preforms for press molding by continuously separating glass gobs from a glass melt flow continuously flowing out of a nozzle at a rate of flow and forming the separated glass gobs with glass preform forming members that are intermittently or continuously moving, ~~characterized in that the method~~ comprising:

moving a support member whereby said support member approaches a front end of the nozzle, so that a front end of the glass melt flow is received by the support member, ~~this the~~ the front end is being supported to form a constriction between a nozzle side and a support side of the glass melt flow, and then dropping the support member ~~is dropped~~ to separate the glass gob from the glass melt flow at the constriction;

transferring the separated glass gob from the support member to a stopped or moving glass preform forming member, which is operative to form a glass preform for press molding ~~article, during a transfer period;~~ and

forming the glass ~~article~~ preform by moving at least one ~~moving~~ glass preform forming member while cooling the glass to form a solid glass preform, wherein

in the case where the glass gob is ~~moved~~ transferred to a stopped glass preform forming member, the ~~transfer~~ period during which the glass preform forming member is stopped for transfer of the glass gob from the support member to the glass preform forming member is made shorter than a gob preparation period, defined as the time required for preparing one glass gob from the ~~continuous~~ glass melt flow using the support member and transferring the glass gob to the glass preform forming member.

3. (currently amended): A method of manufacturing glass ~~articles~~ preforms for press molding by continuously separating glass gobs from a glass melt flow continuously flowing out of a nozzle at a rate of flow and molding the separated glass gobs with glass preform forming members that are intermittently or continuously moving, ~~characterized in that the method~~ comprising:

moving a support member whereby said support member approaches a front end of the nozzle, so that a front end of the glass melt flow is received by the support member, ~~this~~ the front end is being supported to form a constriction between the nozzle side and the support side of the glass melt flow, and then removing support of the support member ~~is removed~~ to separate the glass gob from the glass melt flow at the constriction;

transferring the separated glass gob from the support member to a stopped or moving glass preform forming member, which is operative to form a glass ~~article, during a transfer period~~ preform for press molding; and

forming the glass ~~article~~ preform by moving at least one ~~moving~~ glass preform forming member while cooling the glass to form a solid glass preform, wherein

in the case where the glass gob is ~~moved~~ transferred to a stopped glass preform forming member, the ~~transfer~~ period during which the glass preform forming member is stopped for transfer of the glass gob from the support member to the glass preform forming member is made shorter than a gob preparation period, defined as the time required for preparing one glass glob from the ~~continuous~~ glass melt flow using the support member and transferring the glass gob to the glass preform forming member.

4. (currently amended): The manufacturing method according to any of claims 1 to 3, wherein the ~~transfer~~ period during which the glass preform forming member is stopped for

transfer of the glass gob from the support member to the glass preform forming member, or the time for transferring the glass gob from the support member to a moving glass preform forming member, is made shorter than a gob separation period, defined as the time from when the support member begins to approach the nozzle to when the glass gob has been completely separated.

5. (currently amended): A method of manufacturing glass ~~articles~~ preforms for press molding optical elements by continuously separating glass gobs from a glass melt flow continuously flowing out of a nozzle at a rate of flow and forming the separated glass gobs with glass preform forming members that are intermittently or continuously moving, comprising:

a gob forming-step of receiving a front end of the glass melt flow by a support member and dropping the support member more rapidly than the flow rate of the glass melt flow to separate the glass gob, said gob forming step being preformed once in a fixed cycle period,

transferring the separated glass gob from the support member to a stopped or moving glass preform forming member to mold a glass ~~article~~ preform; and

forming the glass ~~article~~ preform by moving at least one ~~moving~~ glass preform forming member while cooling the glass to form a solid glass preform, wherein

in the case where the glass gob is ~~moved~~ transferred to a stopped glass preform forming member, the period during which the glass preform forming member is stopped for transfer of the glass gob from the support member to the glass preform forming member is made less than or equal to 70 percent of said fixed cycle period.

6. (currently amended): A method of manufacturing glass ~~articles~~ preforms for press molding optical elements by continuously separating glass gobs from a glass melt flow

continuously flowing out of a nozzle at a rate of flow and forming the separated glass gobs with glass preform forming members that are intermittently or continuously moving, comprising:

a gob forming step of receiving a front end of the glass melt flow by a support member, supporting ~~this~~ the front end to form a constriction between the nozzle side and the support side of the glass melt flow, and dropping the support member to separate the glass gob from the glass melt flow at the constriction, said gob forming step being preformed once in a fixed cycle period,

transferring the separated glass gob from the support member to a stopped or moving glass preform forming member to mold a glass ~~article~~ preform; and

forming the glass ~~article~~ preform by moving at least one ~~moving~~ glass preform forming member while cooling the glass to form a solid glass preform, wherein

in the case where the glass gob is moved to a stopped glass preform forming member, the period during which the glass preform forming member is stopped for transfer of the glass gob from the support member to the glass preform forming member is made less than or equal to 70 percent of said fixed cycle period.

7. (currently amended): A method of manufacturing glass ~~articles~~ preforms for press molding optical elements by continuously separating glass gobs from a glass melt flow continuously flowing out of a nozzle at a rate of flow and forming the separated glass gobs with glass preform forming members that are intermittently or continuously moving, comprising:

a gob forming-step of receiving a front end of the glass melt flow by a support member, supporting ~~this~~ the front end to form a constriction between the nozzle side and the support side of the glass melt flow, and removing support from the support member to separate the glass gob from the glass melt flow at the constriction, said gob forming step being preformed once in a fixed cycle period,

transferring the separated glass gob from the support member to a stopped or moving glass preform forming member to form a glass ~~article~~ preform; and

forming the glass ~~article~~ preform by moving at least one ~~moving~~ glass preform forming member while cooling the glass to form a solid glass preform, wherein

in the case where the glass gob is ~~moved~~ transferred to a stopped glass-preform forming member, the ~~transfer~~ period during which the glass preform forming member is stopped for transfer of the glass gob from the support member to the glass preform forming member is made less than or equal to 70 percent of said fixed cycle period.

8. (previously presented): The manufacturing method according to any of claims 1 to 3 and 5-7, wherein the surface receiving the glass gob of the support member is a flat surface and this flat surface is rotated 360° to transfer the glass gob to the glass forming member.

9. (currently amended): The manufacturing method according to any of claims 1 to 3 and 5-7, wherein the surface of the support member receiving the glass gob is tilted to cause the glass gob to fall off, thereby transferring the glass gob to the glass preform forming member, and the direction of the fall of the glass gob is consistent with the direction of movement of the glass preform forming member.

10. (previously presented): The manufacturing method according to any of claims 1 to 3 and 5-7, wherein two consecutively produced glass gobs are separated by receiving the glass melt flow on two different surfaces of the support member.

11. (currently amended): The manufacturing method according to any of claims 1 to 3 and 5-7, wherein, in the course of transferring the glass gob from the support member to the glass preform forming member, the glass gob is turned upside down.

12. (previously presented): The manufacturing method according to any of claims 1 to 3 and 5-7, wherein gas is blown from the surface of the support member receiving the front end of the glass melt flow when receiving said ~~this~~ front end.

13. (currently amended): The manufacturing method according to any of claims 1 to 3 and 5-7, wherein the glass article is a preform ~~for press molding comprised of~~ comprises optical glass.

14. (currently amended): A method of manufacturing optical elements, ~~characterized in that a glass article obtained by the manufacturing method according to claim 13 is~~ comprising:

(1) manufacturing glass preforms for press molding by continuously separating optical glass gobs from a glass melt flow continuously flowing out of a nozzle at a rate of flow and forming the separated glass gobs with glass preform forming members that are intermittently or continuously moving, the method comprising:

moving a support member whereby said support member approaches a front end of the nozzle, so that a front end of the glass melt flow is received by the support member, and then dropping the support member more rapidly than the rate of flow of the glass melt flow to separate a glass gob from the glass melt flow;

transferring the separated glass gob from the support member to a stopped or moving glass preform forming member, which is operative to form a glass preform for press molding; and

forming the glass preform by moving at least one glass preform forming member while cooling the glass to form a solid glass preform, wherein

in the case where the glass gob is transferred to a stopped glass preform forming member, the period during which the glass preform forming member is stopped for transfer of the glass gob from the support member to the glass preform forming member is made shorter than a gob preparation period, defined as the time required for preparing one glass gob from the glass melt flow using the support member and transferring the glass gob to the glass preform forming member;

(2) ~~heat softened~~ softening the glass preform; and

(3) ~~then, press molded~~ molding the softened glass preform into an optical element.

15. (currently amended): A method of manufacturing glass gobs in which glass gobs are formed from a glass melt flowing out of a nozzle at a flow speed, characterized in that:

prior to dripping from the nozzle, bringing the glass melt flowing out into contact with a support member beneath ~~the~~ a lower end of the glass melt flowing out of the nozzle, the glass melt being cooled when brought into contact with the support member that is cooled by circulation of a coolant through the support member, and

then moving the support member downward from beneath the lower end of the glass melt at a speed greater than the flow speed of the glass melt, causing a glass gob of prescribed weight to drip onto the support member from the nozzle, ~~and~~

~~thereafter~~wherein according to the moving step, prior to dripping of the glass gob onto the support member, moving the support member is moved downward in such a manner that contact is temporarily broken between the support member and the lower end of the glass melt.

16. (cancelled):

17. (currently amended): The manufacturing method according to claim 15, further characterized in that the glass ~~glob~~ gob that has dripped is rendered spherical on the support member or after being moved to the glass preform forming member from the support member.

18. (previously presented): The manufacturing method according to claim 15, further characterized in that the difference between the softening point and the glass transition temperature of the glass is less than or equal to 100°C.

19. (previously presented) The method of manufacturing glass gobs according claim 15, further characterized in that the glass gob is a preform for press molding.

20. (currently amended): A method of manufacturing optical elements, ~~characterized in that a preform for press molding manufactured by the manufacturing method according to claim 19 is comprising:~~

(1) manufacturing glass gobs in which glass gobs are formed from an optical glass melt flowing out of a nozzle at a flow speed, characterized in that:

prior to dripping from the nozzle, bringing the glass melt flowing out into contact with a support member beneath a lower end of the glass melt flowing out of the nozzle, the glass melt being cooled when brought into contact with the support member that is cooled by circulation of a coolant through the support member, and

then moving the support member downward from beneath the lower end of the glass melt at a speed greater than the flow speed of the glass melt, causing a glass gob of prescribed weight to drip onto the support member from the nozzle,

wherein according to the moving step, prior to dripping of the glass gob onto the support member, the support member is moved downward in such a manner that contact is temporarily broken between the support member and the lower end of the glass melt;

(2) heat ~~softened~~ softening the glass gob formed into a glass preform; and

(3) then, press ~~molded~~ molding the softened glass preform into an optical element.

21. (previously presented): The manufacturing method according to any of claims 1 to 3 and 5-7, wherein said forming step comprises float forming while said glass gob is formed while floating on a blown gas.

22. (new): A method of manufacturing optical elements, comprising:

(1) manufacturing glass preforms for press molding by continuously separating glass gobs from a glass melt flow continuously flowing out of a nozzle at a rate of flow and forming the separated glass gobs with glass preform forming members that are intermittently or continuously moving, the method comprising:

moving a support member whereby said support member approaches a front end of the nozzle, so that a front end of the glass melt flow is received by the support member, the front end being supported to form a constriction between a nozzle side and a support side of the glass melt flow, and then dropping the support member to separate the glass gob from the glass melt flow at the constriction;

transferring the separated glass gob from the support member to a stopped or moving glass preform forming member, which is operative to form a glass preform for press molding; and

forming the glass preform by moving at least one glass preform forming member while cooling the glass to form a solid glass preform, wherein

in the case where the glass gob is transferred to a stopped glass preform forming member, the period during which the glass preform forming member is stopped for transfer of the glass gob from the support member to the glass preform forming member is made shorter than a gob preparation period, defined as the time required for preparing one glass gob from the glass melt flow using the support member and transferring the glass gob to the glass preform forming member;

(2) heat softening the glass preform; and

(3) then, press molding the softened glass preform into an optical element.

23. (new): A method of manufacturing optical elements, comprising:

(1) manufacturing glass preforms for press molding by continuously separating glass gobs from a glass melt flow continuously flowing out of a nozzle at a rate of flow and molding the separated glass gobs with glass preform forming members that are intermittently or continuously moving, the method comprising:

moving a support member whereby said support member approaches a front end of the nozzle, so that a front end of the glass melt flow is received by the support member, the front end is being supported to form a constriction between the nozzle side and the support side of the glass melt flow, and then removing support of the support member to separate the glass gob from the glass melt flow at the constriction;

transferring the separated glass gob from the support member to a stopped or moving glass preform forming member, which is operative to form a glass preform for press molding; and

forming the glass preform by moving at least one glass preform forming member while cooling the glass to form a solid glass preform, wherein

in the case where the glass gob is transferred to a stopped glass preform forming member, the period during which the glass preform forming member is stopped for transfer of the glass gob from the support member to the glass preform forming member is made shorter than a gob preparation period, defined as the time required for preparing one glass glob from the glass melt flow using the support member and transferring the glass gob to the glass preform forming member;

(2) heat softening the glass preform; and

(3) then, press molding the softened glass preform into an optical element.

24. (new): A method of manufacturing optical elements, comprising:

(1) manufacturing glass preforms for press molding optical elements by continuously separating glass gobs from a glass melt flow continuously flowing out of a nozzle at a rate of flow and forming the separated glass gobs with glass preform forming members that are intermittently or continuously moving, comprising:

a gob forming-step of receiving a front end of the glass melt flow by a support member and dropping the support member more rapidly than the flow rate of the glass melt flow to separate the glass gob, said gob forming step being preformed once in a fixed cycle period,

transferring the separated glass gob from the support member to a stopped or moving glass preform forming member to mold a glass preform; and

forming the glass preform by moving at least one glass preform forming member while cooling the glass to form a solid glass preform, wherein

in the case where the glass gob is transferred to a stopped glass preform forming member, the period during which the glass preform forming member is stopped for transfer of the glass gob from the support member to the glass preform forming member is made less than or equal to 70 percent of said fixed cycle period;

(2) heat softening the glass preform; and

(3) then, press molding the softened glass preform into an optical element.

25. (new): A method of manufacturing optical elements, comprising:

(1) manufacturing glass preforms for press molding optical elements by continuously separating glass gobs from a glass melt flow continuously flowing out of a nozzle at a rate of flow and forming the separated glass gobs with glass preform forming members that are intermittently or continuously moving, comprising:

a gob forming step of receiving a front end of the glass melt flow by a support member, supporting the front end to form a constriction between the nozzle side and the support side of the glass melt flow, and dropping the support member to separate the glass gob from the glass melt flow at the constriction, said gob forming step being preformed once in a fixed cycle period,

transferring the separated glass gob from the support member to a stopped or moving glass preform forming member to mold a glass preform; and

forming the glass preform by moving at least one glass preform forming member while cooling the glass to form a solid glass preform, wherein

in the case where the glass gob is moved to a stopped glass preform forming member, the period during which the glass preform forming member is stopped for transfer of the glass gob from the support member to the glass preform forming member is made less than or equal to 70 percent of said fixed cycle period;

(2) heat softening the glass preform; and

(3) then, press molding the softened glass preform into an optical element.

26. (new): A method of manufacturing optical elements, comprising:

(1) manufacturing glass preforms for press molding optical elements by continuously separating glass gobs from a glass melt flow continuously flowing out of a nozzle at a rate of flow and forming the separated glass gobs with glass preform forming members that are intermittently or continuously moving, comprising:

a gob forming-step of receiving a front end of the glass melt flow by a support member, supporting the front end to form a constriction between the nozzle side and the support side of the glass melt flow, and removing support from the support member to separate the glass gob from the glass melt flow at the constriction, said gob forming step being preformed once in a fixed cycle period,

transferring the separated glass gob from the support member to a stopped or moving glass preform forming member to form a glass preform; and

forming the glass preform by moving at least one glass preform forming member while cooling the glass to form a solid glass preform, wherein

in the case where the glass gob is transferred to a stopped glass-preform forming member, the period during which the glass preform forming member is stopped for transfer of the glass gob from the support member to the glass preform forming member is made less than or equal to 70 percent of said fixed cycle period;

(2) heat softening the glass preform; and

(3) then, press molding the softened glass preform into an optical element.